

INDEX

	PAGE
ugandae, <i>Trentepohlia</i> . . .	320
ugandaensis, <i>Plecia</i> 119, 120 (fig.),	121
uncinata, <i>Plecia</i> 120 (fig.), 121-122,	124 (fig.)
undulata, <i>Psychoda</i> . 47-48 (fig.)	
uniaculeata, <i>Limonia</i> . 235 (fig.),	242-243
unicornuta, <i>Gonomyia</i> 331 (fig.),	333-334
uniflava, <i>Limonia</i> . . .	243
unijuga, <i>Limnophila</i> . . . Pl. 28	
Uranotaenia . . .	30, 33
 vansomereni, <i>Limnophila</i> 287 (fig.),	288-290
vanstraeleni, <i>Ormosia</i> 341 (fig.), 346	
variegata, <i>Styringomyia</i> . . .	379

	PAGE
variitibia, <i>Molophilus</i> 361 (fig.), 363	
varipes, <i>Pseudolimnophila</i> . . .	279
venusticeps, <i>Nephrotoma</i> 162,	163 (fig.), 164-165
venustipes, <i>Hovamyia</i> . . .	335
vicaria, <i>Philia</i> . . . 124 (fig.), 127	
victoria, <i>Tipula</i> . . .	179 (fig.)
vigilans, <i>Molophilus</i> 361 (fig.), 364	
vilhelmi, <i>Limonia</i> . . .	243
 witteana, <i>Teucholabis</i> . . .	321
woosnami, <i>Limonia</i> 243, 244 (fig.)	
 xenophallus <i>Styringomyia</i>	378 (fig.), 380
 zambeziensis, <i>Tipula</i> . . .	179 (fig.)

Harper's Shilling

BRITISH MUSEUM (NATURAL HISTORY)

RUWENZORI EXPEDITION
1934-5

VOL. I. No. 1.

INTRODUCTION
WITH LIST OF LOCALITIES

LONDON

PRINTED BY ORDER OF THE TRUSTEES OF THE BRITISH MUSEUM

MADE AND PRINTED IN GREAT BRITAIN BY
JARROLD AND SONS, LTD., NORWICH AND LONDON

Tanzania Exn. coll. J.M. 1935-203

50 RHOPALOCERA
50 HETEROCERA
50 DIPTERA
50 HYMENOPTERA
50 COLEOPTERA + 63 Staphylinids (ex coll Gedge) added ii. 1939.
50 TRICHOPTERA
50 NEUROPTERA
50 ODONATA
50 HEMIPTERA
50 ORTHOPTERA
1 EMBIID
APHANIPTERA
DERMAPTERA

The numbers are in pencil, being those estimated for the annual report, Feb. 1936.

MADE AND PRINTED IN GREAT BRITAIN BY
JARROLD AND SONS, LTD., NORWICH AND LONDON

RUWENZORI EXPEDITION, 1934-5

REPORTS upon the ENTOMOLOGICAL COLLECTIONS made by this Expedition will be issued in three volumes, as follows:

- Vol. I. *Diptera Nematocera.*
- Vol. II. *Diptera Brachycera and Cyclorrhapha.*
- Vol. III. *Other Insecta.*

It is not expected that the whole of the entomological collections will be reported upon, but on the other hand it is anticipated that it may in some instances prove convenient to include here information upon insect material obtained by other recent British expeditions to East African mountains.

Parts will be issued as they become available, and the series will be closed when it appears that it cannot usefully be continued.

The title "Ruwenzori Expedition, 1934-5" has been chosen for brevity because the bulk of the material is from that district.

Title pages, indexes, etc., will be issued on the completion of each volume.

BOTANICAL COLLECTIONS:

Although no decision has been reached in respect of the botanical collections, it is possible that an account of these may form a fourth volume in this series.

C. FORSTER-COOPER

Director

BRITISH MUSEUM (NATURAL HISTORY)

S. KENSINGTON

LONDON, S.W.7

8th January 1939

JARROLD AND SONS, LTD., NORWICH AND LONDON

1. INTRODUCTION

(With Plates I-XX)

FROM time to time suggestions had been mooted, by members of the Uganda Government Services and other persons interested, for a floral and faunal survey of some of the high mountains in British East African territories. These suggestions resulted in 1934 in the approval by the Trustees of the British Museum of a proposal for a botanical-entomological expedition to Eastern Ruwenzori, and the appointment of two members of the Museum staff—Dr. F. W. Edwards (entomologist) and Dr. G. Taylor (botanist) to act as leaders. The expedition was supported by grants from the Percy Sladen and Godman funds, the Uganda Government, and Mme. de Horrack Fournier. The leaders proceeded to East Africa in September 1934, returning in March 1935; they were joined in Africa by Messrs. D. R. Buxton (then on locust investigations), J. Ford (Oxford University), E. G. Gibbins (Uganda Medical Department), T. H. E. Jackson (Kitale, Kenya), J. F. Shillito (Nyakasura School, Fort Portal), and P. M. Synge (Cambridge University), who assisted in the work of the expedition for varying periods.

The main object of the expedition being to study the flora and insect fauna of Eastern Ruwenzori, two small parties were formed to explore concurrently the little-known valleys of the Namwamba and the Nyamgasani, and visits were also made to other parts of the range. In order to obtain material for comparative purposes brief expeditions were also arranged to three other mountainous districts—the Birunga range in south-west Uganda; Mount Elgon, on the Kenya-Uganda border; and the Aberdare Range, north-east of Nairobi; also to two lowland forest areas, the Kalinzu Forest, near Lake Edward, and the Budongo Forest, near Masindi.

A summarized itinerary is appended to this introduction giving all the localities from which insect specimens were obtained during the course of the expedition, together with dates when the visits were made and the names of the collectors in each locality. The position of the localities is indicated in the accompanying maps. Illustrated accounts of the expedition have been published in *Natural History Magazine*, Nos. 36-40 (1935-6), and in the book by P. M. Synge, *Mountains of the Moon* (Lindsay Drummond, 1937). An account of the experiences of the party in the Nyamgasani Valley, by D. R. Buxton, will be found in *Blackwood's Magazine* for 1936.

As regards the general results of the expedition, experience in the field and

a preliminary survey of the collections suggests the following conclusions regarding the Ruwenzori insect fauna; these conclusions may require modifications when the material has been more fully studied.

1. The changes in the insect fauna noted in the ascent correspond with the vegetational and climatic zones. In the lower zones (up to 6000 feet altitude) the species are chiefly widespread lowland forms; in the forest zones (6500–8000 feet) is found the greatest variety of species, and most groups are well represented; in the bamboo and lower heath zones (8000 to 11,000 feet) there is already very much less variety; finally in the upper heath and alpine zones (11–14,000 feet), the fauna is extremely poor in species (there are, for example, only three butterflies and only one Tipuline crane-fly native to these zones, and no Neuroptera or Orthoptera were found) but those which occur are for the most part different from those of the lower zones.

2. The evidence obtained tends to negative the suggestion that local endemism occurs in the different valleys, at least to any appreciable degree; the insect faunas of each altitudinal zone appear to be similar in different valleys.

3. In the forest and bamboo zones the insect fauna of Ruwenzori shows a marked resemblance to that of the Birunga Mountains, and very much less to that of Mt. Elgon and the Aberdares; this is pronounced in the case of the butterflies and the mosquitoes, the two groups most studied. In the case of the butterflies, Mr. Jackson is of the opinion that there are no true endemics on Ruwenzori, but that all the forms which have been regarded as confined to the Ruwenzori forests will be found to have a wide distribution in the area between Lake Albert and Lake Kivu where conditions are suitable.

4. In various families of Diptera and Lepidoptera a strong "Palearctic" element is present in the zones above 10,000 feet altitude. This is the more noteworthy on account of the general paucity of the fauna.

5. As in the case of other high mountains, Ruwenzori provides numerous examples of species which are brachypterous either in the female sex, or in both sexes; examples of such species were found in the Geometridae and Tineidae among the Lepidoptera, and in the Tipulidae (several genera), Sciarinae, Empididae, Phoridae, Sepsidae and Copromyzidae among the Diptera. On Elgon this phenomenon is even more noticeable, but in both localities it is probable that many of the cases of brachypterism are due to causes unconnected with elevation. Apart from brachypterism, no obvious cases of adaptation to mountain conditions were noted, and nothing to correspond with the "gigantism" of some of the plants.

The following notes on the four distinct mountainous areas visited by the expedition of 1934–5 may be of interest to those who are not already familiar with East African geography:

ABERDARE MOUNTAINS.—A range about 50 miles in length running almost due north and south, its southern end extending to within about 50 miles

in a direct line north-north-west of Nairobi. The range has two main peaks, one in the northern portion, now known as Settima (named on *The Times* atlas Donio Lereko), the other towards the southern end, now known by the Dutch name of Mt. Kinangop (named Donio Ngishei on *The Times* atlas). Both these peaks reach an altitude of 13,000 feet or more, the saddle between them forming a plateau at about 11,000 feet altitude; a lower plateau at about 7-8000 feet altitude is extensively farmed and often referred to as the Kinangop plateau. Roughly speaking the range forms the eastern flank of the Great Rift Valley in its course through the Kenya highlands, the western flank being the Mau Escarpment. Between the altitudes of 7000 and 9000 feet the range is very heavily forested, the forest providing cover for many large mammals, including numerous elephant and buffalo, besides the scarce bongo and giant forest hog. Two distinct zones may be recognized in the forest, a lower zone with large trees, dominated by the "pencil cedar," and an upper one of almost pure bamboo; above these zones the country is mainly open and grass-covered. Though even the summits fall short of the permanent snow-line, frost and falls of snow occur at times. The streams are few in number and all small.

MT. ELGON.—A mountain mass lying about one degree north of the equator, just north-east of Lake Victoria, its south-eastern half lying within the territory of Kenya Colony, and its north-western half in the Uganda Protectorate. It does not, like the other mountains visited, form a range of peaks, but is rather a single mountain—an enormous extinct volcano with a diameter of about 50 miles, the crater at its summit having a diameter of 4 or 5 miles; various minor peaks on the rim of the crater attain altitudes of 14,000 feet or slightly more. A topographical description of the mountain has been given by E. Nilsson (*Geografiska Annaler*, 1931), who also discusses the extent to which it was formerly glaciated. It would seem that during a period corresponding more or less with the ice-age of Europe large glaciers covered most of the top of Elgon, down to an altitude of about 12,000 feet, but certain areas (including the head of the Sosion Valley, visited by the expedition) remained always free from ice. At the present time there is no permanent ice or snow on Elgon, though falls of snow or hail are frequent in and around the crater, and may lie for some days or weeks. About thirty streams or brooks radiate from the crater-rim, one of which takes its origin in the crater itself and forms the source of the Swam River, flowing through a deep gorge on the north-east side of the mountain.

The eruption which formed Elgon probably took place in the late Tertiary, but the volcano was certainly extinct in pre-glacial times. On the south-eastern side of the mountain, visited by the expedition, cultivation extends to an altitude of nearly 7000 feet, above which (7000 to 8500 feet) is a forest zone with large open grassy glades. Above the forest there is very little bamboo, and upper forests of tree-heather have been largely destroyed by the Masai inhabitants and their cattle. Above 10,000 feet altitude the country is quite open

with only low bushes and scattered trees of *Senecio*; the herbage includes a large variety of shrubby Compositae, notably various species of *Helichrysum*.

BIRUNGA (or VIRUNGA) MTS.—A row of three volcanic cones in the extreme south-west corner of Uganda, just north-east of Lake Kivu, their summits on the boundary-line between Uganda and the Belgian Congo, adjoining the Belgian National Park (Parc National Albert); they form part of the Mufumbiro group which is mainly in Belgian territory and includes the larger volcanoes Karissimbi, Mikeno and Nyamlagira. These mountains are famous as being the headquarters of the eastern gorilla, which inhabits the extensive bamboo forests. The three peaks of the Birungas rise abruptly from the volcanic floor of the western rift-valley, which here lies at an altitude of about 6000 feet above sea-level; they are, from east to west, Muhavura (13,547 feet), Mgahinga (11,400 feet), and Sabinio (11,960 feet), the three peaks being only about three or four miles apart. Even Muhavura does not reach the snow-line, and shows no evidence of former glaciation. Largely owing to the porous nature of the ground there are hardly any permanent streams. The mountains of this group were formed in the latest period of volcanic activity in East Africa, probably very late in the Tertiary; some of those in the Congo still possess active craters. They have blocked the floor of the rift-valley, so that Lake Kivu, which formerly had an outflow to Lake Albert and so to the Nile, now discharges to the south.

The rich volcanic soil of the rift-valley at the foot of the mountains is very highly cultivated and the district carries a large population. There is very little true forest on the mountains, but dense bamboo covers the zone between 8000 and 9000 feet altitude; above this are found the zones of tree-heaths, *Hypericum* and *Senecio*, which extend to the summits; the plants in these zones do not attain such large dimensions as on Ruwenzori.

RUWENZORI.—A large block-mountain situated almost on the equator in the western rift-valley between Lakes Edward and Albert. It is the third highest mountain range in Africa, several of its peaks attaining an altitude of over 16,000 feet, and a large central area of the massif being above the present permanent snow-line. The glaciated area was formerly more extensive, though recent surveys have shown that the glaciers were not so widespread as at one time believed, their lower limit having been about 12,000 feet. The range experiences a heavier rainfall than most other East African mountains, and the streams arising on its slopes are numerous and of a good size; the amount of rainfall, however, decreases greatly towards the southern end of the range, and the plain between it and Lake Edward is semi-arid. Ruwenzori is also unique among the high mountains of East Africa in being formed of ancient crystalline rocks instead of volcanic lavas, but geologically speaking it is not an old range, its uplift from the surrounding area of old rocks having probably taken place in connection with if not subsequently to the formation of the rift-valley system about the middle of the Tertiary era.

A full description of Ruwenzori is given in the volumes describing the famous pioneer expedition of the Duke of the Abruzzi in 1906, and in the accounts of recent surveys made by air and on foot by Dr. Noel Humphreys in the years 1925-6 and 1931-2 (see *Geographical Journal*, 69: 516-531, and 82: 481-514).

The vegetation-zones on Ruwenzori are similar to those on other East African mountains, though with some differences. The area of long grass and cultivation gives place at about 6500 feet altitude to the mountain-forest, with a great variety of large trees and dense undergrowth especially of ferns and mosses; in the lower parts of the forest there are also extensive open areas clothed with bracken. The proportionate extent of the forest-zone and the succeeding bamboo-zone varies in different parts of the range; in the Mobuku and Namwamba Valleys the forest-zone is extensive and the bamboo-zone but little developed, whereas the reverse is the case in the Nyamgasani Valley.

The scenery of the mountain areas visited by the Expedition is illustrated in the accompanying Plates I-XX as follows:

ABERDARE MOUNTAINS: Plate I.

BIRUNGA MOUNTAINS: Plates II-III.

RUWENZORI:

Namwamba Valley: Plates IV-VIII.

Nyamgasani Valley: Plates IX-XIII.

Mobuku Valley: Plate XIV.

Northern Spur: Plates XV-XVI.

Mt. ELGON (Kenya side): Plates XVII-XX.

Further illustrations, depicting specific habitats, accompany the various reports of specialists.

The present volume comprises reports upon the *Diptera Nematocera* collected by the Expedition; Volume II deals with the *Diptera Brachycera* (including *Cyclorrhapha*); and Volume III with insects of various orders other than *Diptera*.

LIST OF LOCALITIES

(With dates, names of insect collectors, and maps)

1. Nairobi and the Aberdare Mts. (*F. W. Edwards* and *J. Ford*):

Katamayo River, Kikuyu Escarpment	.. .	21.x.34.
Ruiru Falls	21.x.34.
Ngong Hills, W. of Nairobi	22.x.34.
Thika and Chania Falls, N.-E. of Nairobi	23.x.34.
Mt. Kinangop, Aberdares	25.x.-2.xi.34.

2. On journey to Kigezi (*F. W. Edwards* and *E. G. Gibbins*):

Kampala, Uganda	6-11.xi.34.
Entebbe	9.xi.34 and 13.xii.34.
Kalungi Swamp, W. of Entebbe	12.xi.34.
Masaka and Lake Nabugabo	13.xi.34.
Mbarara and Ruizi Falls	14-15.xi.34.

3. Kigezi District, S.-W. Uganda (*F. W. Edwards*, *J. Ford* and *E. G. Gibbins*):

Mabungo Camp, c. 6000 feet	16-30.xi.34.
Mt. Muhavura, camp at 11,000 feet	17-18.xi.34.
Mt. Mgahinga, summit, c. 9000 feet	22.xi.34.
Mt. Sabinio, Lugezi Camp, 7-8000 feet	20-28.xi.34.
Mt. Sabinio, summit, 10-11,000 feet	24-25.xi.34.
Lake Mutanda (<i>J. Ford</i>)	18.xi.34.
Kanaba Gap and Muko, Kigezi Mts., c. 7500 feet	19.xi.34.

4. Ruwenzori and neighbourhood.

(a) Namwamba Valley (*F. W. Edwards* and *T. H. E. Jackson*):

Kilembe, 4500 feet, grass zone	1-3 and 15-28.xii.34, 21-22.i.35
Kyanjoke Camp, 6500 feet, forest zone	.. 2-4 and 13-19.i.35.
Kararama Camp, 8300 feet, bamboo zone	.. 5.i.35.
Kiriruma Camp, 10,200 feet, lower heath zone	6-7 and 10.i.35.
Kaihinguru Camp, 11,500 feet (<i>E. G. Gibbins</i>)	20.xii.34.
Kasinjiko Camp, 12,500 feet, upper heath zone	8.i.35.
Kitandara Camp, 13,200 feet, alpine zone	.. 24.xii.34 (<i>E. G. G.</i>) 9.i.35 (<i>F. W. E.</i>)



MAP 1.—District covered by expedition.



MAP 2.—Ruwenzori Range.
Showing localities visited by expedition.

(b) Nyamgasani Valley (*D. R. Buxton*):

Bwito, 5000 feet, grass zone	20.xii.34.
Camp I, 6000 feet, forest zone	21-26.xii.34.
Camp II, 7500 feet, bamboo zone	27-31.xii.34.
Camp III, 9000 feet, lower heath zone	1-8.i.35.
Camp IV, 12,000 feet, upper heath zone	9-12.i.35.
Camp V, 13,000 feet, upper heath zone	13-15.i.35.
Camp VI, 12,800 feet, by seventh lake	16-23.i.35.
Camp VII, 13,500 feet, alpine zone by fourth lake	24-26.i.35.

(c) Mobuku* Valley (*F. W. Edwards* and *J. F. Shillito*):

North bank, 4000 feet	3.xii.34.
Bikoni, 7-8000 feet	29-31.xii.34.
Ibanda, 5000 feet	20.i.35.

(d) Northern spur and Fort Portal district (*F. W. Edwards* and *J. F. Shillito*):

Buhundo, Bwamba Pass (West Side), 7500 feet	28-31.i.35.
Mt. Karangora, 9900 feet	1.ii.35.
Nyakasura, S.-W. of Fort Portal	3.xii. 34 and 23-24.i.35.
Fort Portal (Toro)	4.xii.34.
Mpanga (Kibale) Forest, E. of Fort Portal	15.xii.34 and 25.i.35.

(e) Katwe Salt Lakes (*F. W. Edwards*) 1 and 26.xii.35.(f) Kalinzu Forest (*T. H. E. Jackson*) 25.i.1935.5. Masindi district, Lake Albert (*F. W. Edwards*):

Budongo Forest	5-8.ii.35.
Waki Falls	8.ii.35.
Murchison Falls (no insects)	9-10.ii.35.

6. Mt. Elgon (Uganda side) (*J. Ford*) viii.1934.7. Mt. Elgon, S.E. (Kenya side) (*F. W. Edwards* and *T. H. E. Jackson*):

Kapretwa, 6000 feet	15-18.ii.35 and 4.iii.35.
Swam River, 4000 feet	18.ii.35.
Forest zone, 8000 feet	19.ii.35.
Heath and alpine zones, 10-14,000 feet	20.ii.-2.iii.35.

8. Nakuru District (*F. W. Edwards*):

Lake Nakuru	5.iii.35
Hills N.-E. of Nakuru, 9000 feet	6.iii.35
Thomson's Falls, 7000 feet	6.iii.35

* This name should be spelt Mubuku (*teste* J. F. Shillito).



Plate I
ABERDARE MOUNTAINS
Summit of Mt. Kinangop





Plate II
BIRUNGA MOUNTAINS
Muhavura, Mgahinga and Sabinio
(View across rift-valley from Kanaba)





Plate III
BIRUNGA MOUNTAINS
Sabinio from Lugezi Camp





Plate IV
RUWENZORI: NAMWAMBA VALLEY
Kilembe (Expedition Head-quarters)





Plate V
RUWENZORI: NAMWAMBA VALLEY
View from Kasinjiko Camp: Sunrise
(Arrow points to Okuleba Summit)

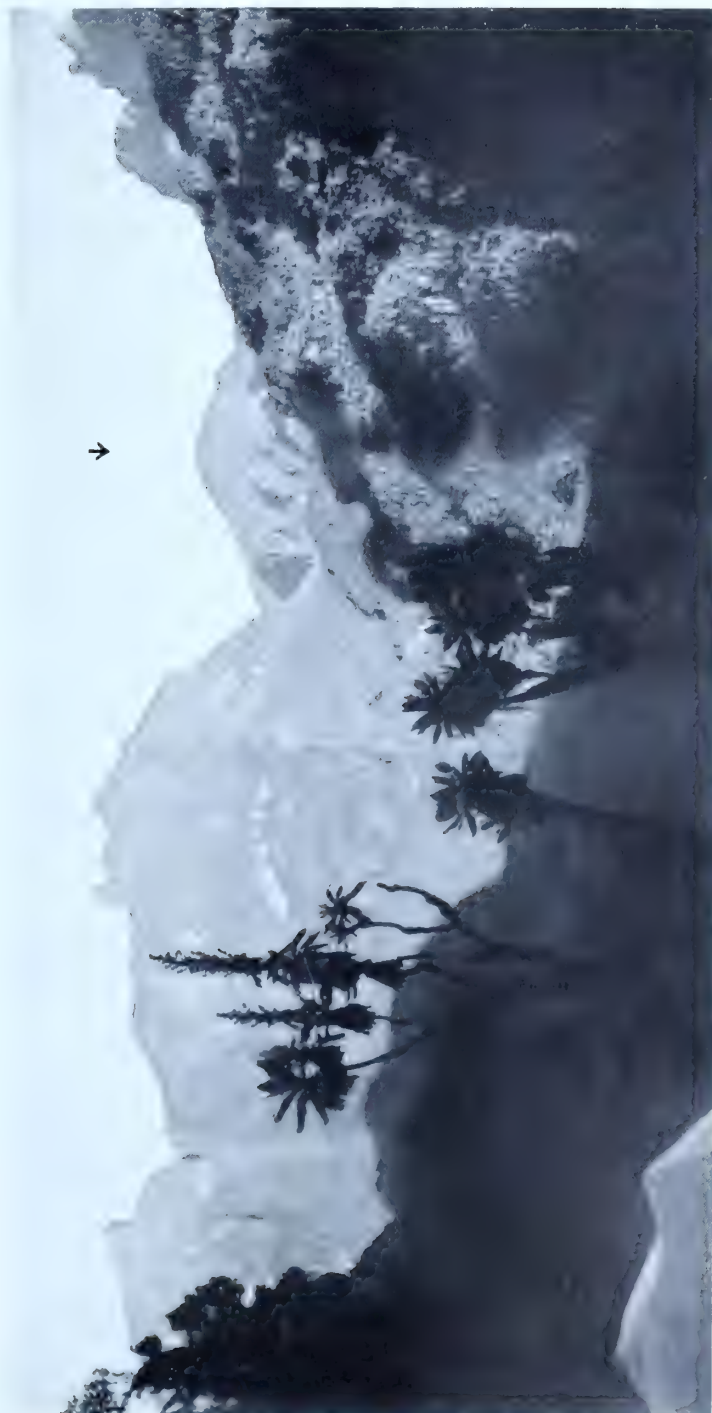




Plate VI
RUWENZORI: NAMWAMBA VALLEY
Kitandara Camp, 13,000 feet





Plate VII
RUWENZORI: NAMWAMBA VALLEY
View south-east from Kitandara Camp





Plate VIII

RUWENZORI

View from Summit of Okuleba

(The snow peaks to left and in centre are parts of Mt. Baker)

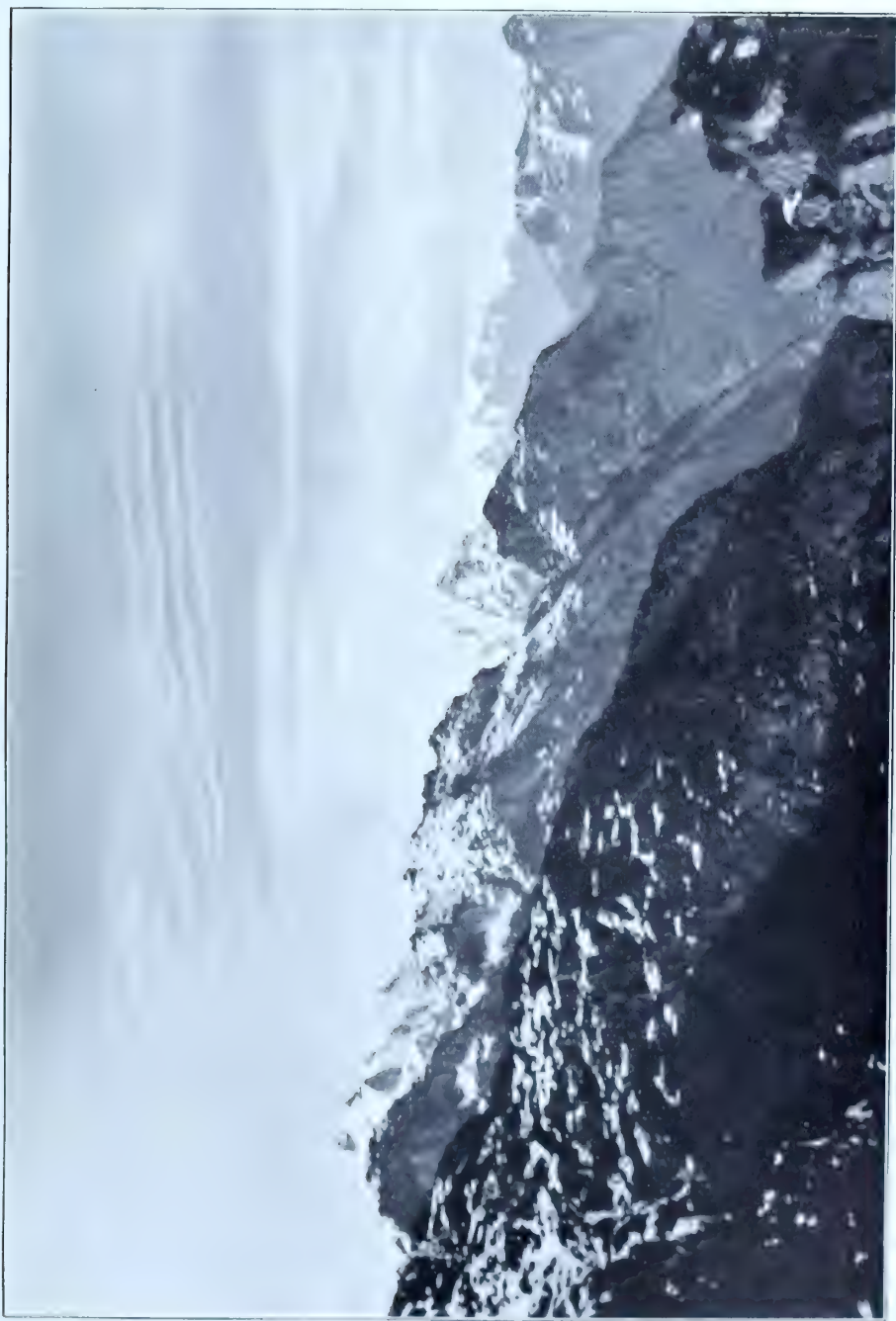




Plate XX

RUWENZORI: NYABONGA VALLEY

Camp on Ridge at 12,000 feet.

(P. M. Synge (Botanist) and P. S. Somervile (Artist) by tent)





Plate X
RUWENZORI: NYAMGASANI VALLEY
Eighth (Lowest) Lake





Plate XI

RUWENZORI: NYAMGASANI VALLEY

Above: Upper part of Gorge with Seventh and Eighth Lakes

Below: Seventh Lake





Plate XII
RUWENZORI: NYAMGASANI VALLEY
Sixth Lake





Plate XIII

RUWENZORI

View from Weissman Peak

(*Left*: Mt. Stanley; *Centre*: Mt. Speke; *Right*: Mt. Baker)





Plate XIV
RUWENZORI: MOBUKU VALLEY
Portal Peaks (in cloud) from Bikoni Hill

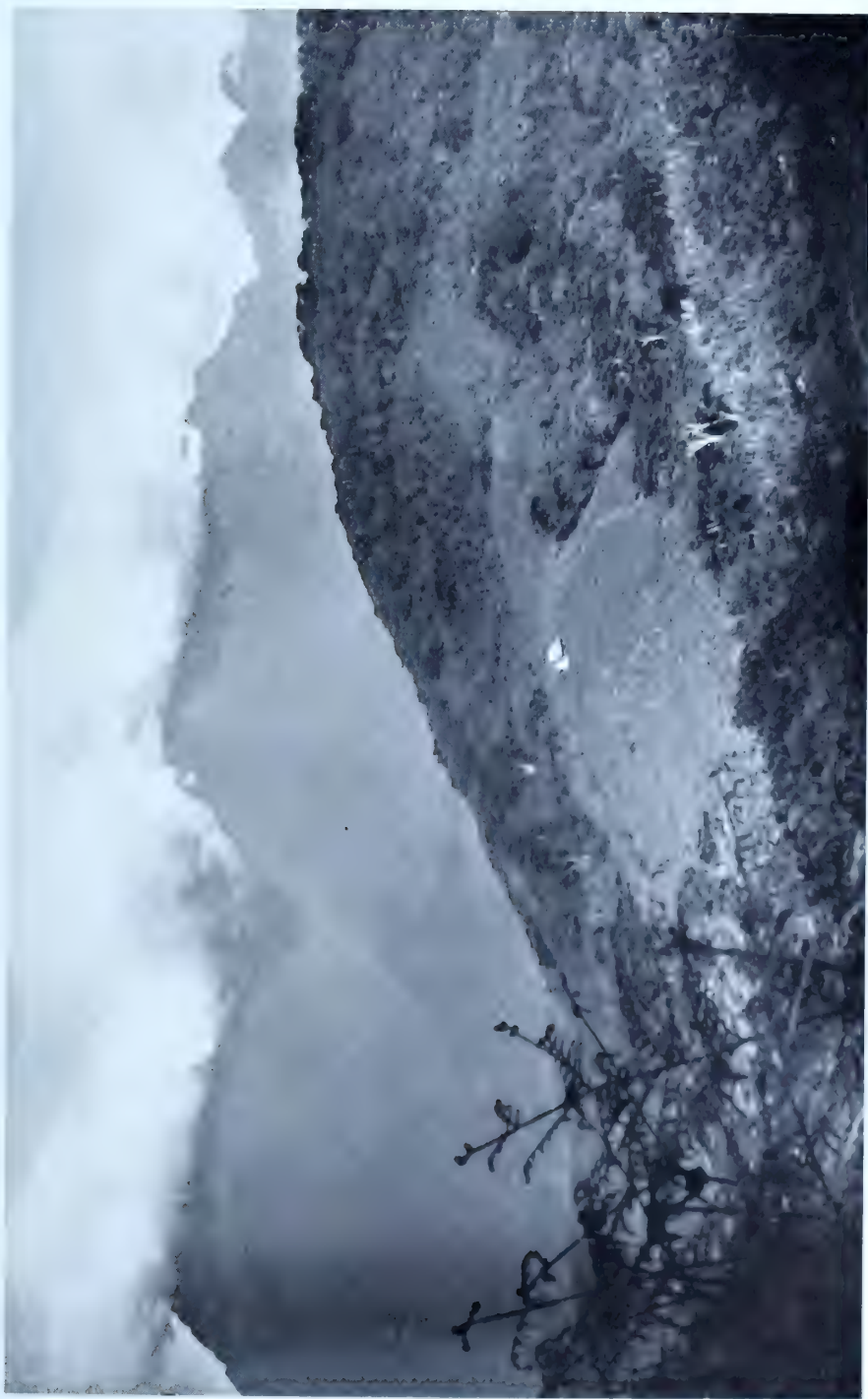




Plate XV
RUWENZORI: NORTHERN SPUR
Tree-Ferns on the Bwamba Pass





Plate XVI
RUWENZORI: NORTHERN SPUR
Nyakasura Crater-lake





Plate XVII

Mt. Elgon from near Endebess (20 miles eastwards)
(The dip in centre of sky-line marks position of Swam Gorge)





Plate XVIII
MT. ELGON
Koitobboss Summit







Plate XIX
MT. ELGON
Head of Sosion Valley with Peak 14170
(indicated by arrow)





Plate XX

Mr. ELGON

View from Peak 14170, showing Tarn





